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(54) **Aluminium alloy extruded material for automotive structural members and production method thereof**

(57) An aluminum alloy extruded material for automotive structural members, which contains 2.6 to 5 wt% of Si, 0.15 to 0.3 wt% of Mg, 0.3 to 2 wt% of Cu, 0.05 to 1 wt% of Mn, 0.2 to 1.5 wt% of Fe, 0.2 to 2.5 wt% of Zn, 0.005 to 0.1 wt% of Cr, and 0.005 to 0.05 wt% of Ti, and satisfies relationship of the following expression (I),

$(\text{Content of Mn (wt\%)}) + 0.32 \times (\text{content of Fe (wt\%)}) +$

$0.097 \times (\text{content of Si (wt\%)}) + 3.5 \times (\text{content of Cr$

$(\text{wt\%})) + 2.9 \times (\text{content of Ti (wt\%)}) \leq 1.36 \quad (I)$

with the balance being made of aluminum and unavoidable impurities. A method of producing the aluminum alloy extruded material for automotive structural members, which comprises cooling with a refrigerant from outside of a die-exit side, at the time of extrusion.

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EUROPEAN SEARCH REPORT

Application Number
EP 00 12 7251

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 99 53110 A (OHYAMA KOJI ;BEKKI YOICHIRO (JP); HAYASHI NOBORU (JP); FURUKAWA EI) 21 October 1999 (1999-10-21) * abstract * * page 12 - page 19; examples 1-2, SAMPLES, 1, 12; tables 1, 3 * * claims *	1-12	C22C21/02 C22C21/04 B21C29/00
X	WO 99 60181 A (BEKKI YOICHIRO ;HAYASHI NOBORU (JP); FURUKAWA ELECTRIC CO LTD (JP)) 25 November 1999 (1999-11-25) * abstract * * page 10 - page 19; examples 1, 2, SAMPLES, D, G, J, L, M; tables 2, 3, 6, 8 * * claims *	1, 9-11	
X, P	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 14, 5 March 2001 (2001-03-05) -& JP 2000 313931 A (FURUKAWA ELECTRIC CO LTD; THE; HONDA MOTOR CO LTD), 14 November 2000 (2000-11-14) * abstract * * page 4; example A; table 3 *	1	
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 11, 30 September 1999 (1999-09-30) -& JP 11 172390 A (NIPPON STEEL CORP; SKY ALUM CO LTD), 29 June 1999 (1999-06-29) * abstract *	1	
A	GB 605 282 A (NAT SMELTING COMPANY) 20 July 1948 (1948-07-20) * the whole document *	1	
The present search report has been drawn up for all claims			

TECHNICAL FIELDS
SEARCHED (Int.Cl.7)

C22C
B21C

Place of search

MUNICH

Date of completion of the search

18 October 2001

Examiner

Patton, G

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Application Number
EP 00 12 7251

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A,P	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 05, 14 September 2000 (2000-09-14) -& JP 2000 063973 A (FURUKAWA ELECTRIC CO LTD:THE;HONDA MOTOR CO LTD), 29 February 2000 (2000-02-29) * abstract *	1,3-7	
A,P	--- PATENT ABSTRACTS OF JAPAN vol. 2000, no. 05, 14 September 2000 (2000-09-14) -& JP 2000 063972 A (FURUKAWA ELECTRIC CO LTD:THE;HONDA MOTOR CO LTD), 29 February 2000 (2000-02-29) * abstract *	1,3-7	
A,P	--- PATENT ABSTRACTS OF JAPAN vol. 2000, no. 14, 5 March 2001 (2001-03-05) -& JP 2000 313933 A (FURUKAWA ELECTRIC CO LTD:THE;HONDA MOTOR CO LTD), 14 November 2000 (2000-11-14) * abstract *	1,4	
A	--- PATENT ABSTRACTS OF JAPAN vol. 2000, no. 01, 31 January 2000 (2000-01-31) -& JP 11 286759 A (NIPPON LIGHT METAL CO LTD), 19 October 1999 (1999-10-19) * abstract *	5-7	
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 18 October 2001	Examiner Patton, G
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

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ON EUROPEAN PATENT APPLICATION NO.**

EP 00 12 7251

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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18-10-2001

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
WO 9953110	A	21-10-1999	JP	11293362 A	26-10-1999
			JP	11293363 A	26-10-1999
			CN	1263566 T	16-08-2000
			EP	0992598 A1	12-04-2000
			WO	9953110 A1	21-10-1999
			NO	996012 A	08-02-2000

WO 9960181	A	25-11-1999	JP	11323471 A	26-11-1999
			EP	1008665 A1	14-06-2000
			WO	9960181 A1	25-11-1999

JP 2000313931	A	14-11-2000	NONE		

JP 11172390 1	A		NONE		

GB 605282	A	20-07-1948	NONE		

JP 2000063973	A	29-02-2000	EP	0985736 A1	15-03-2000
			WO	9923266 A1	14-05-1999

JP 2000063972	A	29-02-2000	EP	0985736 A1	15-03-2000
			WO	9923266 A1	14-05-1999

JP 2000313933	A	14-11-2000	NONE		

JP 11286759 3	A		NONE		

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82